

Claims:

1. A method of testing a currency item comprising deriving a plurality of measurements of the currency item at a resolution (R) and processing the measurements to derive values at a different resolution.
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2. A method as claimed in claim 1 wherein the resolution is reduced in the spectral domain, the method comprising filtering the signal of the measured values in the spectral domain to reduce the resolution in the spectral domain by taking a subset of the set of spectral components.
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3. A method as claimed in claim 2 wherein the subset is of a predetermined size.
- 15 4. A method as claimed in claim 2 or claim 3 wherein the spectral domain is the frequency spectrum.
5. A method as claimed in claim 4 wherein the filtering excludes high frequency components.
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6. A method as claimed in any one of claims 2 to 5 wherein the signal of the measured values is normalized, preferably by a mean value, before filtering.
- 25 7. A method as claimed in any one of claims 2 to 6 comprising deriving a feature vector using the subset of spectral components.
8. A method as claimed in claim 7 comprising processing the feature vector using a neural network, including a backpropagation network or an LVQ network.
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9. A method as claimed in any preceding claim comprising interpolation to increase the resolution in the spatial domain.

10. A method as claimed in claim 9 wherein measurements are derived at
5 a first resolution R1 in a first spatial direction and at a second resolution R2 in a second spatial direction.

11. A method as claimed in claim 10 wherein the first and second
10 directions are substantially perpendicular

12. A method as claimed in claim 10 or claim 11 wherein $R1 < R2$, and wherein the processing increases the resolution in the first direction to approximately R2.

13. A method as claimed in any preceding claim involving a method of
15 reconstituting a sampled signal.

14. A method as claimed in any preceding claim involving summing
20 measured values weighted by a weighting function.

15. A method as claimed in claim 14 wherein the weighting function is of the form $\sin(x)/x$.

16. A method as claimed in any preceding claim including using a
25 weighting window to compensate for edge effects.

17. A method as claimed in claim 16 wherein the weighting window is a raised cosine window such as a Hamming or Hanning or Kaiser-Bessel window.
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18. A method as claimed in any one of claims 9 to 17 comprising removing the mean of the measured values before interpolation and reinstating it after interpolation.
- 5 19. A method as claimed in any preceding claim wherein the measured values are derived along a line substantially parallel to one edge of the document.
- 10 20. A method as claimed in any preceding claim for validating a currency item.
21. A method as claimed in any preceding claim for denominating a currency item.
- 15 22. A method as claimed in any preceding claim for testing a document, banknote or other value sheet.
23. A method as claimed in any one of claims 1 to 21 for testing a coin.
- 20 24. A currency tester adapted to perform a method as claimed in any preceding claim.
- 25 25. A currency tester as claimed in claim 24 comprising means for sensing a currency item at resolution R.
26. A currency tester as claimed in claim 25 comprising means for sensing a currency item at resolution R1 extending in a first direction and means for sensing a currency item at a resolution R2 in a second direction.

27. A currency tester as claimed in claim 25 comprising a linear sensor array of resolution R1 and means for moving the currency item relative to the sensor array at a resolution R2.

5 28. A currency tester as claimed in any one of claims 24 to 27 for denominating and/or validating currency items.

29. A currency tester as claimed in any one of claims 24 to 28 for testing a coin.

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30. A currency tester as claimed in any one of claims 24 to 29 for testing a document, banknote or other value sheet.

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31. A currency tester as claimed in claim 30 wherein a document can be fed in the transport path with skew and offset with respect to the edge of the transport path.

32. A currency tester as claimed in any one of claims 24 to 31 which can process a plurality of currency items of different sizes.

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